



Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352
APR 22 2002

0057034

02-WMD-137

Mr. David R. Einan
Acting Hanford Project Manager
U.S. Environmental Protection Agency
712 Swift Boulevard, Suite 5
Richland, Washington 99352

RECEIVED
APR 30 2002
EDMC

Dear Mr. Einan:

TRANSMITTAL OF THE 200-PW-1 OPERABLE UNIT DISPERSED CARBON
TETRACHLORIDE VADOSE ZONE PLUME SAMPLING AND ANALYSIS PLAN-STEP I,
DOE/RL-2001-67, REV. 0

Attached is the subject document for your information. This document has been revised based on comments received from the U.S. Environmental Protection Agency (EPA) on the Draft A version of the document. Responses to comments were discussed at the 200-PW-1 Work Plan Comment Resolution meeting on March 27, 2002, with the U.S. Department of Energy, Richland Operations Office (RL) and EPA. The concurrence page was signed by EPA and RL at that meeting. A copy of RL's responses to EPA comments is also included for your information.

The 200-PW-1 dispersed carbon tetrachloride vadose zone plume investigation is divided into two steps: (I) shallow/intermediate and (II) intermediate/deep investigations. This plan describes the shallow/intermediate investigation, scheduled to be performed in fiscal year 2002, consistent with the "200-PW-1 Plutonium/Organic-Rich Process Condensate/Process Waste Group Operable Unit Remedial Investigation/Feasibility Study Work Plan (DOE/RL-2001-01)."

If you have any questions, please contact me on (509) 373-9631.

Sincerely,

Arlene C. Tortoso, Project Manager
Waste Management Division

WMD:ACT

Attachments:

1. Sampling and Analysis Plan
2. Responses to EPA Comments

cc w/attachs:

D. A. Faulk, EPA
J. A. Hedges, Ecology
M. Harmon, EM-40
Admin. Record

cc w/o attachs:

L. R. Curry, BHI
B. Ford, BHI

**U.S. Environmental Protection Agency Comments on
DOE/RL-2001-67, Draft A**

Received from D. A. Faulk by e-mail 12/19/01

1. I struggled with the background section and the three objectives stated on page 1-6. From the text it is not clear what the scope of the dispersed plume investigation is. Is it focused on the vadose zone only or on both the vadose and groundwater? Please clarify. If it is both, as I suspect, then the bullets on 1-6 make sense. If it is only on the vadose zone, then I fail to see how these investigations will have any affect on setting ACLs.

Response: The focus of the dispersed plume investigation is on the vadose zone. The following sentence was added to the text before the statement of the three objectives.

"The focus of the dispersed carbon tetrachloride vadose zone plume investigation is on the vadose zone in order to understand whether carbon tetrachloride sources in the vadose zone are currently, or may in the future, be impacting groundwater."

The phrase "or identification of alternative groundwater contamination limits" in the first objective was deleted.

2. Page 1-11, please define general depths for each of the zones.

Response: The depths for each of the zones were added to Table 1-1 and to Figure 1-4.

3. Table 3-1. It is not clear what the rationale for choosing 25 ft intervals is. Please clarify. Also, in the well deepening work, I believe there was a sand layer around 70 ft (?). It seems like we would want to target this zone. Also, why is the DNAPL detection fabric (ribbon sampler?) not being considered?

Response: The following note was added to Table 3-2: "A 25 ft sampling interval was selected for sampling deeper than 25 ft bgs because (1) it is anticipated that the vapor concentration gradient will not change rapidly with depth, and (2) it will allow a broader exploration of the vadose zone by limiting the number of samples required at any one location. The sandy silt layer in the Plio-Pleistocene unit is anticipated at approximately 115 ft bgs; the caliche layer in the Plio-Pleistocene unit is anticipated at approximately 125 ft bgs. The DPT installations should not extend into the caliche layer."

The well deepening began at 99 ft bgs in well 299-W15-95 and at 110 ft bgs in well 299-W15-84. The caliche was encountered at approximately 112.5 ft bgs in well W15-95 and at 121 ft bgs in well W15-84. The drilling encountered sand, silty sand, and sandy silt in the interval above the caliche in well W15-95 and sandy silt in the interval above the caliche in well W15-84. The silty sand and sandy silt layers are part of the Plio-Pleistocene unit and will be sampled if encountered by the direct push technology.

The ribbon sampler may be considered during Step II investigations or during Step I if significantly-elevated carbon tetrachloride concentrations in soil vapor are detected. The following text was added to address use of this and other innovative field investigation tools:

"An advanced drive point technology, the wire-line cone penetrometer (CPT), may be considered for characterization of carbon tetrachloride in the upper 35 m of the vadose zone. The wire-line CPT avoids a potential difficulty inherent in direct push sampling: removing the rods and reinserting them in the same hole. Several advanced characterization tools can be used with the wire-line CPT to sample carbon tetrachloride in the vadose zone. Among those, the wire-line CPT gas sampler may be used to draw soil gas samples to the surface for analysis and the wire-line CPT grouting module may be used to grout the hole after sampling has been completed. The ribbon nonaqueous-phase liquid sampler may be used to determine if nonaqueous phase carbon tetrachloride is present in areas of high vapor concentrations. Use of these characterization tools will depend on their availability and cost-effectiveness."

4. Table 3-3. I do not understand footnote (a). What is the 500 communicating?

Response: Footnote (a) was modified to read: "This value is an estimated maximum number of samples."

5. Page 5-1. Delete the statement that these procedures have been developed to implement the requirements of Ecology.

Response: The third sentence in this paragraph was changed to read: "These procedures have been prepared to implement the requirements found in *Strategy for Management of Investigation-Derived Waste* (Ecology et al. 1999)."

Appendix A

6. Page A-3, last paragraph, ERDF is not a TSD.

Response: Accept. "TSD" was replaced by "waste disposal facility."

7. In general, it is not clear to me how this waste will be characterized. In addition, DOE has declared that this CCL4 came from a listed waste source so by default if CCL4 is detected this waste must carry the F001 or a contained in determination needs to be sought.

Response: The following text was added to the Waste Control Plan: "The F001 listed waste code will be applied to vadose zone drilling and subsurface investigation wastes on a case-by-case basis (Attachment 4)." Attachment 4 identifies the applicability of the F001 listed waste code for each known and suspect waste site associated with carbon tetrachloride release modes.

In addition, the following text was added to Section 5.0 of the Sampling and Analysis Plan:

"The F001 listed waste code will be applied to vadose zone drilling and subsurface investigation wastes on a case-by-case basis. If the carbon tetrachloride within a waste stream was not used as a RCRA solvent/degreaser or in contact with a RCRA solvent/degreaser, then the F001 waste code will not be applied to materials from vadose zone drilling and subsurface investigations at the associated waste site. However, the F001

listed waste code will be applied to materials from drilling and subsurface investigations that reach the historical groundwater level or perched water. The applicability of the F001 listed waste code to vadose zone wastes associated with each of the known or suspected carbon tetrachloride waste sites identified in this SAP is presented in Table 5-1."

8. It is not clear to me where the IDW will be stored prior to shipment to ERDF. Please clarify.

Response: The figure in Attachment 2 of the Waste Control Plan was replaced by one showing the locations of the IDW waste container storage areas.

**U.S. Environmental Protection Agency Comments on
DOE/RL-2001-67, Rev. 0 Redline**

Received from D. A. Faulk by e-mail 3/21/02

1. Section 5. Suggest dropping the "RCRA" part of the 2nd sentence and just say solvent/degreaser. This comment is applicable to Table 5-1 also.

Response: Accepted. The second and third sentences of this paragraph were modified to read: "If the carbon tetrachloride within a waste stream was used as a solvent/degreaser or in contact with a solvent/degreaser, then the F001 waste code will be applied to materials from vadose zone drilling and subsurface investigations at the associated waste site. The F001 listed waste code will be applied to materials from drilling and subsurface investigations that reach the historical groundwater level or perched water."

2. Schedule. Note that this schedule may change based on final negotiations of the PW-1 schedule.

Response: Accepted. The schedule is consistent with the schedule in the 200-PW-1 work plan.

**U.S. Environmental Protection Agency Comments on the
Waste Control Plan**

Received from D. A. Faulk by e-mail 3/21/02

1. Section 2.1. CWC will need to have an offsite determination prior to sending TRU there. Please insert Offsite lang.

Response: The following sentence was added after the 3rd sentence of the second paragraph in Section 2.1: "An offsite determination request for TRU waste storage at the Central Waste Complex must be approved by the U.S. Environmental Protection Agency prior to transport."

2. Section 2.5. It is not clear why there are two waste storage areas. Please clarify. I expect all waste to be stored at the ZP-1/UP-1/PW-1 Waste Storage Area.

Response: The figure was changed to show only the 200-ZP-1/200-PW-1 waste storage location.

**U.S. Department of Energy, Richland Operations Office, Comments on
DOE/RL-2001-67, Draft A**

Received from A. C. Tortoso by email 12/5/01

1. *There is no mention of the Vadose Zone modeling of Carbon Tetrachloride that PNNL will be doing. Although the modeling effort may not be completed in time to help guide the Step I sampling design, I think that some discussion of the model and how the information will be used for the Step II design should be included.*

Response: The following bullet was added to Section 3.1:

- Numerical modeling of carbon tetrachloride flow and transport in the vadose zone will be conducted to help guide field investigations of the dispersed plume. Although the modeling effort may not be completed in time to support Step I sampling, it is anticipated that the predictions of the distribution of carbon tetrachloride in the vadose zone and its potential for continued migration to groundwater will aid in formulating Step II sampling plans.
2. A detailed schedule of the field sampling should be included. The schedule should also show how the Step I results will lead into the design for Step II.

Response: A new section, Section 6.0 Schedule, was added and a schedule was included.